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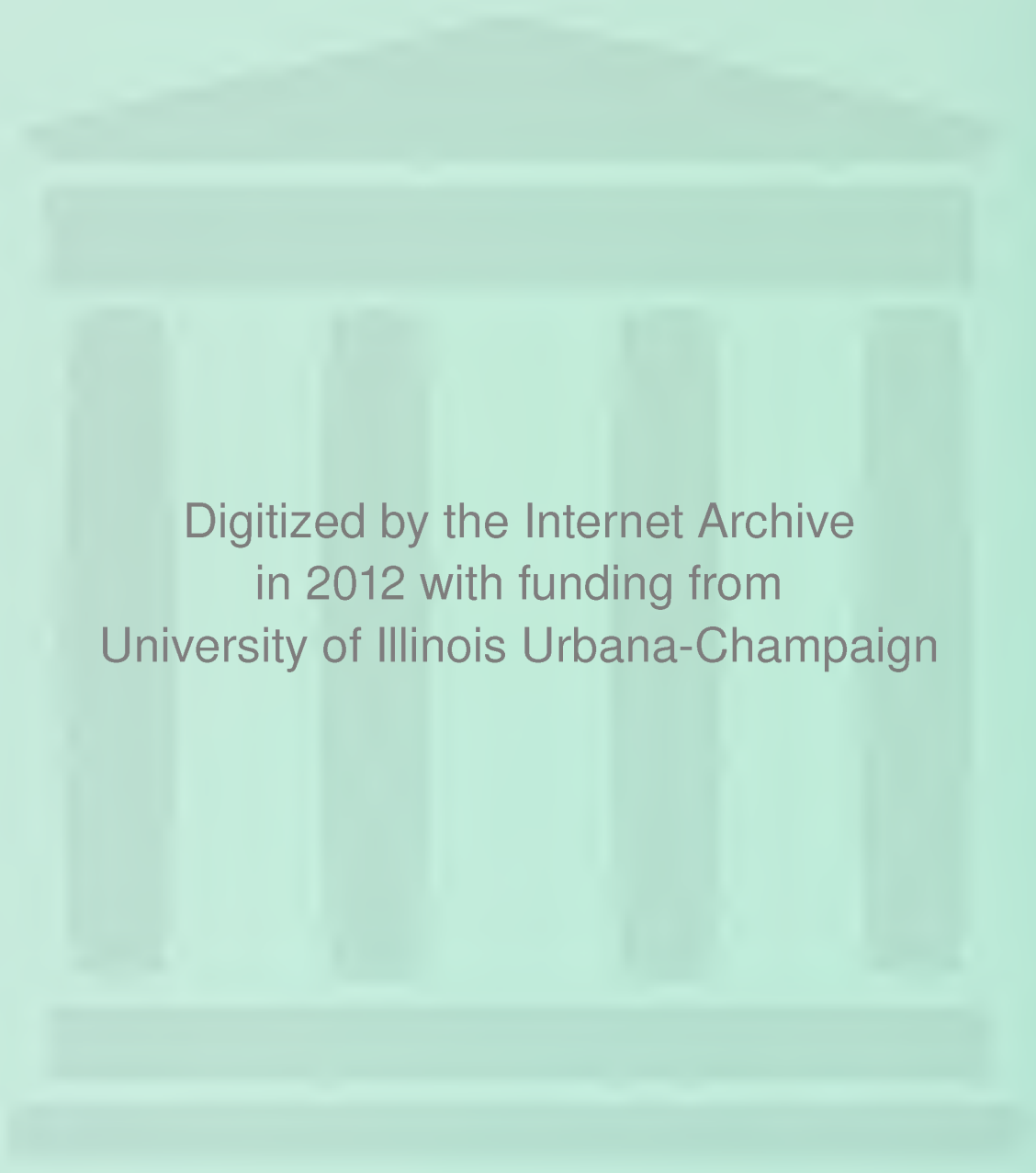
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IS THE PRICE/QUALITY
RELATIONSHIP IMPORTANT?

David M. Gardner

#186

College of Commerce and Business Administration
University of Illinois at Urbana-Champaign

FACULTY WORKING PAPERS

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#186

Abstract

This paper examines price, relative to other factors, in predicting product quality. Three design factors that may be responsible for the dispersion of results in the price/quality controversy are also examined. Product evaluation is found to be the most important variable in predicting product quality, while the exact prices and products used and the measurement of product quality are less critical than presumed. Attitude toward a product was found to be closely correlated with product quality.

In the last three years, several research studies have appeared that have both clarified and raised more issues surrounding the relationship of price to quality (5, 13, 14, 17, 21, 23, 25, 26). While we no longer believe there is a generalized price/quality relationship, it is unclear under what circumstances a price/quality relationship might be found and those circumstances which work against the finding of such a relationship. And of possibly more importance, it is unclear how important price cues are in determination of perceived product quality relative to other cues. The role of this paper is to first advance several factors that potentially contribute to the price/quality relationship and to test these factors in a controlled setting and then, second, to test the relative importance of these factors in explaining perceived product quality.

Early research exploring the price/quality relationship was implicitly premised on the assumption that price was the dominate variable influencing judgment of quality by consumers (19, 32). Subsequently, research has indicated that price is not always the dominate variable (14, 17, 21, 31). Other studies show price as an important variable, but only within certain constraints (5, 26). And when consumers are asked to rank order variables useful and important in the purchase situation, price is clearly not the most important factor (13, 24).

In his review of the literature dealing with how price influences buyers' decisions, Monroe offers several suggestions for explaining

differences in findings (22). His main suggestion is that the multitude of research designs and products tested make comparison difficult, if not impossible. And he also suggests that the rather limited range of prices presented in the studies is a problem.

A more specific appraisal of these problems suggests that comparing studies is certainly difficult, but that within almost all studies exploring the price/quality relationship, there are design factors present that may potentially account for as much variance as the specific factors under study. At least three factors seem likely candidates for generating alternative hypotheses. They are:

1. Acceptable price range.
2. Product selection.
3. Measurement of product quality.

Price Range

Are all prices on a continuum equally subject to a price/quality relationship? Of course not. But how should prices be chosen in order to reduce to minimize the chance that the prices themselves are unrealistic? Gabor and Granger have formally shown that a consumer enters the market place, not with a single acceptable price in mind, but a range of acceptable prices (8, 9, 10, 11, 12). Gabor and Granger's procedure results in high and low prices for a product that represent the extreme points of an "acceptable range of prices." If these estimates are averaged over all respondents, the net result is all extreme prices are eliminated. It is reasonable to assume that the

acceptable price range of individual consumers overlap, to some extent, with the average acceptable range of prices.

To set prices for a study exploring the price/quality relationship without knowledge of individual or average acceptable price ranges, is likely to result in prices that fall entirely outside, or possibly entirely within the acceptable price range. Therefore, due to a contrast effect, it can be argued that prices outside the range of acceptable prices have a higher probability of producing a price/quality relationship than prices falling within the acceptable range of prices. Prices falling within the acceptable range of prices would be subject to the assimilation effect. It can clearly be argued that prices falling outside the acceptable price range may produce a price/quality effect, but that the effect could be misleading if the effect were extrapolated to prices within the range of acceptable prices.

The only study in the literature reporting that prices were set using the procedure of Gabor and Granger suffers because all prices fall within the acceptable range of prices (14). This study by Gardner did not find significant price/quality relationships. However, a study by Enis and Stafford in which price was chosen by a knowledgeable salesman with no other criteria reported, found significant price/quality relationships (5). It is impossible to tell if prices in this later study fell outside acceptable price ranges, but if so, the contrast may account for the significant effects.

Therefore, to reduce the possibility of alternative hypotheses, it appears necessary to set prices, not on the basis of convenience or judgement, but on the basis of pre-tests that establish consumer price limits for the exact product under investigation.

Product Selection

The second factor, product selection, has largely been handled on the basis of experimenter convenience or the implicit belief that a given product is amenable to a price/quality relationship. In addition, only a few studies have compared more than one product class (13, 14, 19, 25, 32). What should be the criteria for product selection? That product selection is potentially critical is demonstrated by the studies of both Tull, Boring and Gonsior (32) and Leavitt (19). Both indicate that price takes on more importance as an indicator of quality for products described as heterogeneous.

Hupfer and Gardner show a wide range of level of involvement with various products and issues (16). Since it is commonly agreed that consumers process information differently for low involving products and issues than for high involving ones, (28) it is logical to assume that the use of price as an indicator of quality may vary depending on the level of involvement with the particular product under investigation.

A review of the literature failed to uncover a product classification model that would be useful for choosing products for investigation. The only model that sets out criteria for placing products in categories useful for studying price/quality relationship appears to be that of :

Cohen and Barban. They have devised a "product typology" based on two dimensions: perceived need-relatedness and perceived social conspicuousness (2). They advance these two factors as being basic to consumer judgment and response to products. This results in the fourfold classification shown in Figure 1.

Again, to reduce the possibility of alternative hypothesis, it appears necessary to compare products that are clearly demarcated on some appropriate typology. It may initially be a naive typology such as "frequency of purchase" (13), but researchers must be able to distinguish between similar and dissimilar products and situations.

Measurement of Product Quality

The third factor is the measurement of product quality itself. There are at least two problems. The most obvious is that not all studies use the same dependent variable. While most use a single scale with positive ratings at one extreme and negative at the other, there is no consistency in the descriptive terms to describe points on the scale or the standardization of the number of intervals on the scale. However, the more serious problem is to assume that product quality is a uni-dimensional phenomena or can be measured as if it were uni-dimensional. The investigation of products using multi-dimensional scaling by many researchers suggest that, indeed, there probably are a number of dimensions to the concept of product quality. Given the assumption of several dimensions, how should product quality be measured?

At least three alternatives seem reasonable.

1. Possession scores of product attributes.
2. Attitude toward the product.
3. Affect associated with the product.

While these dependent variables may in themselves be uni-dimensional, their collective use may show more of the dimensionality of product quality than the single measure of high and low quality. The advantage of these terms measures is two fold. First, they give some richness to the data so that we can move beyond a simple yes or no approach to exploring the price/quality relationship. Using these measures we need not merely report the existence or non-existence of a price/quality relationship. The use of measures of product attributes allows researchers to determine what attributes are affected by price. Second, these measures allow the researcher to gain insight on how information is being processed by the consumer, especially how it affects an evaluation composed of several adjectives.

Overall Importance of Price

While the issues raised above may result in alternative hypotheses and be partially responsible for differences in findings between studies, they leave one very important issue unresolved. The unresolved issue is the overall importance of price in determining perceived product quality. While several studies have shown that price affects perceptions of product quality (9, 19, 26, 32) other studies have shown brand name can be a more important cue than price (5, 14, 17) in determining

perceived product quality. This suggests that price may not be the dominant variable, at least for all product categories. If true, only looking at the price variable may produce potentially misleading results. Therefore, it appears appropriate that to adequately assess the price/quality relationship, those factors important, in addition to price, in effecting perceived product quality be incorporated in studies of the price quality relationship.

Questions to be Answered

An experiment was designed to explore these factors and how they affect the finding of price/quality relationships and to allow the importance of price to be ascertained. Specifically, several questions were advanced to guide the study.

1. Is a price/quality relationship more apt to be identified for Conspicuous/Ego products than for Inconspicuous/Physiological products? Reference group theory would tend to suggest such a finding (6). However, the reason for asking this question is that almost all products used to explore the price/quality relationship have been of the Conspicuous/Ego type. Does price perform the same function for products that are less conspicuous and physiological in nature?
2. Will a price/quality relationship be found only for prices falling outside the "acceptable range of prices?" Will the same relationship be found across products? The evidence is mixed. However, following assimilation-contrast logic, a price/quality relationship should be found for prices outside the "acceptable range of prices."

The same logic tends to predict the lack of a price/quality relationship for prices within the "acceptable range of prices."

3. What will be the relationship between price and attitude toward the product? It is logical to assume that perceived product quality is really a proxy measure of attitude toward the product. If so, then we should expect the same general relationship between price/attitude and for price/quality.
4. What will be the relationship between price and affect associated with the product? If affect is an evaluation of the product, will it be more similar to perceived quality or ratings of product attributes?
5. Will there be a price/product attribute relationship? If, when talking about product quality, consumers really mean the amount of certain attributes associated with the product, then price, acting as a cue, should suggest more possession of desirable product attributes as price increases.
6. The above questions hint at a correlation between perceived product quality, attitude toward the product and affect associated with the product. What is the nature of that correlation?
7. How important is price relative to other variables in predicting perceived product quality.

RESEARCH DESIGN

To insure that possible alternative explanations of the data were minimized, caution was taken to carefully control for nuisance

variables. Also, the respective levels of the independent variables were chosen only after pretesting and all measures of dependent variables were constructed following procedures to insure validity. Nuisance variables were controlled by complete randomization and by incorporating into the design two major variables, brand and store. These latter two variables are often reported as moderating or influencing the price/quality relationship.

Price

The exact prices used in the manipulations were established using the approach developed by Gabor and Granger (9). Average high and low prices for each product were determined in a pretest by asking,

"What is the lowest price below which you would suspect that the product is not of good quality?"

"What is the highest price you would pay?"

In Table 1, the average high price is labeled Upper Limit and the average low price is labeled Lower Limit. These two prices represent the boundary points of the acceptable price ranges. The price labeled Below Price Range was determined by selecting a price that was approximately the mean price of those prices falling outside and below the Lower Limit. Likewise, the price labeled Above Price Range was determined by selecting a price that was approximately the mean price of those prices falling outside and above the Upper Limit. In all instances except two, these prices exceed the Lower and Upper Limits by 20 percent. Therefore, they should be noticeably higher or lower to a majority of subjects.

Product Selection

Products were selected using the typology of Cohen and Barban (2). This typology was selected because of the basic nature of the factors and because of the reported internal consistency. The exact products to be used for this study were selected after pre-testing. From the list of products reported by Cohen and Barban, eight were selected for pre-testing. These eight products met the criterion of being of potential interest to undergraduate students. Six of the eight products met the criterion of students having adequate information allowing them to make meaningful judgments about these products. The four products shown in Table 1 were finally chosen such that two products would be Inconspicuous/Physiological and two would be Conspicuous/Ego.

Brand Selection

The proposed design of this study called for two levels of Brand: Desirable and Undesirable. In the pre-test, subjects were asked to indicate the most and least desirable brands for the products under consideration. The plan was to choose that brand as Desirable which was indicated by the majority of subjects as being desirable. The most undesirable brand indicated by the majority of students would be the second level of Brand, i.e., Undesirable. While there was great consistency in desirable brands, there was no consistency for undesirable. Questioning and reflection indicated that it is impossible for an undesirable brand to remain on the market long enough for there to be agreement on its undesirability, even though certain brands may be undesirable to individuals. Therefore, completely

unfamiliar brand names were chosen as the second level of brand.

The unfamiliar brand names used were private label names not sold in the area in which the study was conducted.

Store Selection

That stores have distinct images has been shown repeatedly, starting with Martineau (20). Therefore, it is reasonable, that for any single product, some stores are seen as a desirable place to buy a product, others as undesirable. In the pre-test, students were asked to indicate the most and least desirable store in the local area in which to purchase each of the products under consideration. While some variance was found, it was clear that department stores and men's specialty stores were seen as the most desirable stores in which to purchase socks and shirts, with chain discount and surplus stores as the least desirable. An almost identical pattern was found for electric toothbrush and tape recorder. The most desirable store for a tape recorder was a store specializing in stereo systems.

The variable, store, is included in the design of this study because of the findings of Enis and Stafford (5) and Szybillo and Jacoby (31). Enis and Stafford reported an interaction between price and store image for the product, carpeting. Szybillo and Jacoby found store image the most important variable in predicting product quality for hosiery. This indicates the possibility that store image differentially affects perceived product quality. Also, it seems

reasonable to predict that store image will affect a price/quality relationship. However, there is no data to specifically predict the exact nature of this relationship.

METHODOLOGY

The study utilized a completely randomized, two-by-two-by-four factorial design with the independent variable of Brand at two levels, the independent variable of Store at two levels, and the independent variable of Price at four levels. Three-hundred-twenty-four subjects participated in the study. Each subject was exposed once to a product description of the four products. Due to random assignment of subjects to treatment conditions, the number of subjects in each cell varied between 15 and 27. The design of the experiment is shown in Table 1. Each product was treated as being independent, since there was a complete randomization of treatment presentations.

Dependent Variables

Product quality, as measured by a single seven-point scale, was the first dependent variable. Subjects indicated their estimate of quality by placing a check on a scale having "Extremely High Quality Product" and "Extremely Low Quality Product" as the extreme points. Willingness to Buy, as measured by a single seven-point scale, was the second dependent variable. Subjects indicated how willing they would be to buy the product if it were available at the price and store shown by placing a check on the scale having "Extremely Willing To Buy" and "Extremely Unwilling To Buy" as the extreme points on the scale.

The third dependent variable was attitude toward the product. Controversy surrounds any measure of attitude, especially when applied to the field of consumer behavior (3, 30). The measure of attitude used in this study is based on a structural model of similar algebraic form to the approaches of both Fishbein and Rosenberg (7). The model used here has been advanced specifically for studies of consumer behavior and is based on an expectancy x value formulation. This model advanced by Cohen and Ahtola (1) is as follows:

$$A_b = \sum_{j=1}^n P_j I_j$$

where: A_b = a consumer's attitude toward a brand

P_j = the brand's possession score on attribute j , i.e., the extent to which a consumer believes that the brand possesses the j th product attribute or want satisfying property

I_j = the importance of the j th product attribute

n = the number of salient product attributes

Ideally, each product should have its own unique set of product attributes. Comparison across products, however, is severely hindered if each attribute is unique to a particular product. Therefore, from the pre-test only those attributes were chosen for measurement that were common to three or more of the products used in the study. These attributes were:

Durability

Good construction

Good materials

Pleasing appearance

For each of these attributes, subjects first indicated to what extent the product possessed each attribute by placing a check on a seven-point scale for each attribute. The scales had "Has Very Little of It" and "Has A Lot of It" as the extreme points. Subjects then indicated how important each attribute was by placing a check on a seven-point scale having "Not At All Important to Me" and "Very Important to Me" as the extreme points.

The fourth dependent variable, affect associated with the product, was composed of a series of bi-polar adjectives on seven-point scales. Through extensive factor analysis, Gardner and Ahtola (15) have developed unique sets of evaluative scales for three product categories: clothing, food and cosmetics, and small electrical appliances. Once the exact product within the product category is decided upon, subjects in a pre-test can be asked to evaluate that product using the entire set of scales for the product category. A single factor will always be the result of a factor analysis of this data. All scales loading on this single factor are then used in the study to form the measure of affect associated with the product. Therefore, the exact adjectives are unique for each product and highly loaded on the evaluative dimension. The number of bi-polar adjective scales associated with each product was as follows:

Men's Socks	26 adjective scales
Electric Toothbrush	14 adjective scales
Tape Recorder	24 adjective scales
Men's Dress Shirt	30 adjective scales

Due to the different number of scales and unique adjectives, comparison between products is difficult. However, within product analysis should give insight on the relationship between product affect and the price/quality relationship.

Manipulations

The manipulation of Brand, Store and Price was carried out by presenting subjects, in groups, packets which contained a description of a product and then the questionnaire containing the dependent variable measures. The basic product description for a product was identical in each treatment except for the manipulation of brand, store and price in the context of a product description. To ensure exposure to the appropriate information forming the independent variables, the subject was asked to write on the questionnaire the price, store and brand name for the product being judged. A description, typical of those used is:

PRODUCT: ELECTRIC TOOTHBRUSH

The electric toothbrush is made by General Electric. Designed to get teeth cleaner than by hand method. Exclusive 10,000 up and down strokes per minute. Recharges automatically when stored in stand. Comes with stand, mounting bracket and 4 brushes. It is sold locally by Carson Pirie Scott at \$22.95.

After reading the description of one product and responding to the associated questionnaire, the subject went on to the second product, and then the third and fourth. Twenty minutes was allowed for completion of all four questionnaires. Products were not available for inspection.

RESULTS:

Experimental Investigation

All data was analysed using completely randomized factorial analysis of variance procedures (33). Where appropriate the Newman Keuls multiple comparison test was used for tests of significance between means (33).

Product Quality

The first dependent variable was perceived product quality. Significant differences imply that perceived product quality was affected by one of the independent variables of store, brand or price.

The results reported in Table 2 clearly suggest that perceived product quality is influenced by brand, store, and price, the main effects being significant in all cases except for the price main effect for the product electric toothbrush. Only one interaction is noted.

For each product, "desirable brand" resulted in a more positive perceived product quality than "unknown brand". The marginal means for perceived product quality are reported in Table 3. Likewise, for each product, "desirable store" resulted in a more positive perceived product quality than "Undesirable store."

To test for significant comparisons in perceived product quality related to levels of price the Newman-Keuls multiple comparison test (33) was used. All possible pair-wise comparisons were significant.

at the .01 level for all products except electric toothbrush. For electric toothbrush - no comparisons were significant as would be indicated by the lack of a significant price main effect in Table 2.

Willingness to Buy

The second dependent variable was willingness to buy. As was expected willingness to buy was generally influenced by brand, store and price. Table 4 indicates the nature of this relationship showing brand, store and price each influencing willingness to buy for the products men's socks and men's shirt. Brand and price influence willingness to buy product electric toothbrush. No significant relationship was found for the product tape recorder. Marginal means are reported in Table 5. It is clear that willingness to buy decreases as price increases and that desirable brand and desirable store always result in increased willingness to buy.

Testing for significant comparisons in willingness to buy related to levels of price the Newman-Keuls multiple comparison test (33) was used. No significant comparisons were found for the product tape recorder. For the product men's socks, all comparisons were significant at the .01 level except between the upper and outside upper limits. For the products electric toothbrush and men's dress shirt, all comparisons were significant at the .01 level except between the outside lower limit and the lower limit.

Attitude

The third dependent variable is a measure of attitude toward the product. For perspective, the data is reported in both aggregated and disaggregated form. An overall (aggregated) measure was constructed by multiplying, for each attribute, possession and importance scores. These products were then summed. The sums, for each product, were analyzed using analysis of variance procedures. The F-ratios are reported in Table 6.

Assuming that an attitude toward a product is slightly different, depending on the exact composition of product characteristics and environment in a particular combination, differences should be found. Those differences seem to be somewhat similar to those obtained using perceived product quality as a dependent variable. Table 7 contains the marginal means for the overall measure of attitude.

For all products except men's socks, "desirable brand" resulted in a more positive attitude than "unknown brand." Likewise, for men's socks and men's dress shirt, "desirable store" resulted in a more positive attitude than "undesirable store." To test for significant comparisons in attitude related to levels of price, the Newman-Keuls multiple comparison test (33) was used. These comparisons are summarized in Table 8. The general relationship seems to be for attitude to be more positive as price increases. However, the two significant interactions indicate, that at least in some limited instances, store and brand may jointly influence this relationship.

For perspective, Table 9 shows F -ratios for only sums of possession scores. The results are almost identical to those reported in Table 6 for aggregated attitude. For further perspective, separate analysis of variance were conducted on the possession scores of each attribute. Reported in Table 10 are the comparisons between price means for possessions scores. Not reported are the F -ratios for individual possession scores. There is a generally consistent relationship with attribute possession being positively related to store, brand and price. A major exception is no significant relationship between store and possession scores for electric toothbrush.

Affect

The fourth dependent variable was a measure of the affect associated with the product. As shown in Table 11 no significant relationship was found between price and affect, although a significant relationship was found with brand for all four products and with store for the products tape recorder and men's dress shirt.

Correlation

A measure of correlation between the four dependent variables was obtained. Data from all treatment cells was aggregated for a measure of overall correlation. As might be expected, as Table 12 indicates, all the dependent measures are associated.

Perceived product quality and attitude toward the product are consistently associated. Likewise, affect and attitude toward the product are also associated, but at a lower level of association.

Willingness to buy is correlated with perceived product quality and measures of attitude and affect for products electric toothbrush and tape recorder, while willingness to buy products men's socks and men's dress shirt are only associated with affect toward the product and only product men's socks is associated with perceived product quality. In general, however, while many of the correlations are significant, the level of association is not high.

Results: Importance of Price

Using multiple regression procedures (4), the relative importance of prices in predicting perceived product quality was determined. Two models were proposed for testing. The first

$$\text{Product Quality}_I = w_0 + w_B B + w_S S + w_P P$$

where w_B , w_S , w_P are the coefficients of determination for the respective factors of Brand, Sore, and Prices. These are the same three independent variables used throughout this study, except, for the purposes of this analysis, the data for each treatment level have been aggregated.

The second model introduces summed attribute possession scores as a fourth independent variable. The logic for the introduction of this latter variable is that customers react to the product itself, in addition to where it is sold, brand name and price (31). Hence:

$$\text{Product Quality}_{II} = w_0 + w_B B + w_S S + w_P P + w_A \Sigma A$$

Table 13 shows that using Model I, Price is the most important factor in predicting perceived product quality for both Men's Dress Shirt and Men's Socks, while Brand is the most important factor for Electric Toothbrush and Tape Recorder. With the exception of the Price factor for Electric toothbrush, all factors were significant. These results are necessarily consistent with the results of the analysis of variance procedures reported in Table 2.

The introduction of the fourth factor in Model II (attribute possession) shows that this later factor is always the most important factor in predicting perceived product quality. Furthermore, the addition of this factor results in a substantial increase in the amount of explained variance for each product. Again, with the exception of the Price Factor for Electric Toothbrush, all factors were significant. Model II also indicates that while summed attribute possession is always the most important variable, for clothing products (men's socks and men's dress shirt) price is the second most important variable, while for small electric products (Electric toothbrush and tape recorder) brand is the second most important variable.

Step-wise multiple regression analysis was also carried out. As expected, results were identical to the multiple regression results reported in Table 13. However, the step-wise analysis clearly revealed that most of the explained variance due to the summation of attribute scores was due to the single attribute of "good construction."

Discussion

While a number of studies have explored the price/quality relationship, no resolution of the exact nature of the relationship has been achieved. The results associated with the experimental manipulations of this study have clarified several issues. However, these results, by themselves are not very exciting. Looking only at these results, one must conclude that while this study introduces the concept of attitude, and refines the procedure for selecting products, no major insight has been obtained. But, by incorporating the answers to the second part of this study dealing with the relative importance of price with respect to other variables, we can begin to observe one reason why our general price/quality knowledge is inconclusive. That reason is that price alone, and even price together with variables like store and brand explain a relatively small proportion of the variance. If this is the case, then the unexplained variance is likely to be more important in effecting perceived product quality than is price.

It seems to be clear that the common sense attribution of a price/quality relationship does, in fact, exist, but price is not the dominant variable in judging product quality. Therefore, continued search for this causal relationship is unlikely to be successful.

However, price is still an important variable in determining perceived product quality. This study clearly points out that price does influence judgements of product quality, and in particular, suggests that price is more important for some products than others. This argues

for further investigation into the role of price as a factor influencing perceived product quality, but it does not argue necessarily that price should be the sole or even dominant prediction of product quality.

As a guide to further studies in the continuing evaluation of factors effecting perceived product quality, this study has clarified the following issues.

1. The first finding is that based on this limited study, whether or not a product is conspicuous, inconspicuous, physiological or ego involving, does not affect the finding of a significant price/quality relationship. Since these are quite basic factors in consumer behavior, it is reasonable to suggest that price as a cue indicating quality acts in a similar manner for most products. Differences between products will have to be explained using other variables than conspicuous, inconspicuous, physiological or ego involving.
2. The second finding is that while significant price/quality relationships are identified for prices outside the acceptable range of prices, they are also identified for prices that form the boundary points of the acceptable range of prices. This strong finding, in the presence of two other variables, i.e., brand and store, is at odds with some studies, but yet consistent with others. If previous studies had not reported the lack of a price/quality relationship (13, 16) one could be tempted to extrapolate to a generalized price/quality relationship.

3. With only minor exceptions, the price/quality relationship is almost identical to the price/attribute possession relationship. The price/quality relationship is also almost identical to the price/attitude relationship. However, it is clear that only possession scores are operating in a differential manner. The strong relationship between price/quality relationship and price/attribute possession relationship is confirmed by noting the high correlation between perceived product quality and attitude. This is strong indication that product quality, measured directly as in this study, is serving as a proxy for attitude toward the product.

4. The affect associated with a product does not seem to be influenced by price. It is, however, influenced by brand. This may possibly suggest that consumers evaluate brands on the basis of the affect associated with given brands, but somehow separate price out into a different type of decision rule. The consumer may be saying that I evaluate Brand X positively, but will judge its exact qualities on some other basis, rather than affect.

5. But, we cannot ignore the strong, positive correlation between perceived product quality, attitude and affect. It is probably safe to assume, however, that this relationship is largely an artifact of combining the data from all cells for this measure. Therefore, we are witnessing a co-variation, with brand being largely responsible for the correlation.

6. And finally, for all products except Tape Recorder, willingness to buy appears to be a direct function of price, the higher the price, the less willing to buy. In addition to being a common sense finding, it also serves as a check on the validity of the price manipulation.

SUMMARY AND CONCLUSIONS

By studying factors influencing perceived product quality from both the perspective of Analysis of Variance and multiple regression, it is clear that how subjects evaluate the product is more important than price, brand or store. There are two additional contributions from this study. First, it appears that worries about prices falling outside "acceptable price limits" are largely unfounded. This does not imply that "unreasonable" prices would lead to the same conclusion, but prices "within reason" seem appropriate for investigation. The second contribution is the suggestion that all products are susceptible to a price/quality relationship. This study tends to refute the idea that "consumer" variables are important in determining the nature of the price/quality relationship. However, it does not answer the question of what "product" variables are important in determining the nature of the price/quality relationship.

The study points out one aspect of the price/quality relationship that needs investigation. It appears that perceived product quality is a proxy for attitude toward the product and possibly affect associated with the product. But the exact nature of the relationship remains unspecified. If price does affect given product attributes

more than others, this is valuable information for a more complete understanding of consumer information processing. The relationship between product affect and price also needs further exploration.

Further work must also be carried out to explore in more detail the type of product evaluation influencing perceived product quality and how this factors interacts with the other known factors, especially price, store, brand.

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FIGURE 1

COHEN AND BARBAN
PRODUCT TYPOLOGY

Perceived Social Conspicuousness

Perceived
Need-
RelatednessInconspicuous/Physiological
Inconspicuous/EgoConspicuous/Physiological
Conspicuous/Ego

TABLE 1

DESIGN OF THE EXPERIMENT

Independent Variables	Inconspicuous/ Physiological Products		Conspicuous/ Ego Products	
	Electric Toothbrush	Men's Socks	Tape Recorder	Men's Dress Shirt
Brand:				
Desirable	General Electric	Burlington	Sony	Arrow
Unfamiliar	Imperial	Westminister	Soundtronics	Mayfair
Store:				
Desirable	Carson, Pirie Scott	Baskin	Diener Stereo	Redwood & Ross
Undesirable	Zayre	Zayre	K-Mart	Champaign Surplus
Price:				
Below price range	8.95	.59	22.95	4.98
Lower limit	10.00	.79	34.95	5.98
Upper limit	16.95	1.98	90.00	13.50
Above price range	22.95	2.25	110.00	15.00

TABLE 2

F-RATIOS FOR DEPENDENT VARIABLE

Perceived Product Quality

Source of Variation	Men's Socks		Electric Toothbrush		Tape Recorder		Men's Dress Shirt	
	df.	F	df.	F	df.	F	df.	F
Brand	1	18.36 ^(a)	1	32.60 ^(a)	1	36.89 ^(a)	1	50.82 ^(a)
Store	1	24.29 ^(a)	1	22.38 ^(a)	1	17.53 ^(b)	1	20.18 ^(a)
Price	1	28.27 ^(a)	1	1.18	1	9.32 ^(a)	3	18.11 ^(a)
Brand x Store	1	.79	1	1.87	1	1.07	1	4.94 ^(c)
Brand x Price	3	.83	3	.31	3	1.74	3	1.60
Store x Price	3	1.47	3	.71	3	1.67	3	1.46
Brand x Store x Price	3	.66	3	.64	3	.71	3	.97
Within Replicates	321		311		313		326	

a = significant at .001 level

b = significant at .10 level

c = significant at .05 level

TABLE 3

MARGINAL MEANS FOR DEPENDENT
VARIABLE - PERCEIVED PRODUCT QUALITY

	Men's Socks	Electric Toothbrush	Tape Recorder	Men's Dress Shirt
<u>Brand</u>				
Desirable	5.03	5.01	4.83	5.44 ^a
Unknown	4.46	4.30	3.96	4.48
<u>Store</u>				
Desirable	5.07	4.87	4.59	5.26
Undesirable	4.42	4.43	4.20	4.66
<u>Price</u>				
Outside Lower Limit	3.99	4.51	3.80	4.41
Lower Limit	4.38	4.59	4.32	4.54
Upper Limit	5.02	4.82	4.67	5.55
Outside Upper Limit	5.60	4.69	4.78	5.35

^aThe higher the value, the higher the perceived product quality. Values range from 1 to 7.

TABLE 4

F-RATIOS FOR DEPENDENT VARIABLE

Willingness to Buy

Source of Variation	Men's Socks		Electric Tooth Brush		Tape Recorder		Men's Dress Shirt	
	df.	F	df.	F	df.	F	df.	F
Brand	1	9.05 ^(b)	1	11.98 ^(a)	1	3.67	1	7.24 ^(b)
Store	1	7.93 ^(b)	1	2.89	1	.14	1	8.56 ^(b)
Price	3	3.66 ^(b)	3	5.62 ^(a)	3	1.04	3	19.00 ^(a)
Brand x Store	1	1.51	1	.06	1	.57	1	.37
Brand x Price	3	1.59	3	.57	3	1.14	3	2.52
Store x Price	3	.04	3	1.02	3	1.06	3	2.86 ^(c)
Brand x Store x Price	3	.42	3	.47	3	.92	3	.09
Within Replicates	321		311		313		326	

a = Significant at .001 level

b = Significant at .01 level

c = Significant at .05 level

TABLE 5

MARGINAL MEANS FOR DEPENDENT
VARIABLE - WILLINGNESS TO BUY

	Men's Socks	Electric Toothbrush	Tape Recorder	Men's Dress Shirt
<u>Brand</u>				
Desirable	3.94	3.39	3.15	3.79 ^a
Unknown	3.39	2.79	2.81	3.32
<u>Store</u>				
Desirable	3.92	3.24	3.02	3.81
Undesirable	3.41	2.94	2.95	3.30
<u>Price</u>				
Outside Lower Limit	3.88	3.44	3.00	4.36
Lower Limit	3.95	3.40	3.12	4.00
Upper Limit	3.66	2.95	3.08	3.16
Outside Upper Limit	3.18	2.57	2.72	2.71

^aThe higher the value, the more willing to buy the product. Values range from 1 to 7.

TABLE 6
F-RATIOS FOR DEPENDENT VARIABLE

Source of Variation	Attitude (Aggregated)							
	Men's Socks		Electric Toothbrush		Tape Recorder		Men's Dress Shirt	
	df.	F	df.	F	df.	F	df.	F
Brand	1	3.42	1	27.82 ^(a)	1	25.95 ^(a)	1	6.96 ^(b)
Store	1	5.17 ^(c)	1	.01	1	1.92	1	13.38 ^(a)
Price	3	12.38 ^(a)	3	.29	3	5.33 ^(a)	3	4.66 ^(b)
Brand x Store	1	1.06	1	.13	1	.97	1	1.33
Brand x Price	3	1.78	3	1.56	3	.48	3	4.93 ^(b)
Store x Price	3	.76	3	.19	3	.74	3	.49
Brand x Store x Price	3	.19	3	2.32	3	2.95 ^(b)	3	.04
Within Replicates	323		311		313		326	

a = Significant at .001 level

b = Significant at .01 level

c = Significant at .05 level

TABLE 7

MARGINAL MEANS FOR DEPENDENT
VARIABLE - ATTITUDE

	Men's Socks	Electric Toothbrush	Tape Recorder	Men's Dress Shirt
<u>Brand</u>				
Desirable	116.82	107.48	115.64	124.74 ^a
Unknown	108.04	85.75	92.89	111.99
<u>Store</u>				
Desirable	117.82	96.80	107.36	127.21
Undesirable	107.04	96.43	101.17	109.52
<u>Price</u>				
Outside Lower Limit	96.55	96.65	90.47	112.11
Lower Limit	100.28	94.76	102.35	110.73
Upper Limit	121.80	95.30	111.27	133.46
Outside Upper Limit	131.08	99.75	112.98	117.16

^aThe higher the value, the more positive the attitude. Values of possession and importance scores range from 1 to 7. Value of the summed products range from 4 to 196.

TABLE 8
COMPARISONS BETWEEN PRICE MEANS
ATTITUDE

	Men's Socks	Electric Toothbrush	Tape Recorder	Men's Dress Shirt
Outside Lower Limit vs. Outside Upper Limit	X		X	X ^a
Outside Lower Limit vs. Lower Limit	X		X	
Outside Lower Limit vs. Upper Limit			X	X
Lower Limit vs. Upper Limit	X		X	X
Lower Limit vs. Outside Upper Limit	X			X
Upper Limit vs. Outside Upper Limit	X		X	X

a = significant comparison at .01 level

TABLE 9

F-RATIOS FOR DEPENDENT VARIABLES

Source of Variation	Sum of Attribute Possession							
	Men's Socks		Electric Toothbrush		Tape Recorder		Men's Dress Shirt	
	df.	F	df.	F	df.	F	df.	F
Brand	1	4.04 ^(c)	1	27.91 ^(a)	1	25.34 ^(a)	1	12.90 ^(a)
Store	1	11.07 ^(a)	1	.23	1	3.46	1	17.57 ^(a)
Price	3	14.05 ^(a)	3	.61	3	7.88 ^(a)	3	4.92
Brand x Store	1	1.81	1	1.81	1	1.93	1	1.70
Brand x Price	3	1.05	3	.64	3	.99	3	5.5
Store x Price	3	.90	3	.05	3	1.87	3	.47
Brand x Store x Price	3	.14	3	.75	3	2.64 ^(c)	3	.01
Within Replicates	323		311		313		326	

a = Significant at .001 level

b = Significant at .01 level

c = Significant at .05 level

TABLE 10

COMPARISONS BETWEEN PRICE MEANS
POSSESSION SCOREProduct Attribute - Durability

	Men's Socks	Electric Toothbrush	Tape Recorder	Men's Dress Shirt
Outside Lower Limit vs. Outside Upper Limit	X		X	X ^a
Outside Lower Limit vs. Lower Limit			X	
Outside Lower Limit vs. Upper Limit			X	X
Lower Limit vs. Upper Limit			X	X
Lower Limit vs. Outside Upper Limit	X		X	X
Upper Limit vs. Outside Upper Limit	X		X	X

Product Attribute - Good Construction

Outside Lower Limit vs. Outside Upper Limit	X		X	X
Outside Lower Limit vs. Lower Limit			X	
Outside Lower Limit vs. Upper Limit			X	X
Lower Limit vs. Upper Limit			X	X
Lower Limit vs. Outside Upper Limit	X		X	X
Upper Limit vs. Outside Upper Limit	X		X	X

Product Attribute - Good Material

Outside Lower Limit vs. Outside Upper Limit	X		X	X
Outside Lower Limit vs. Lower Limit	X		X	X
Outside Lower Limit vs. Upper Limit			X	X
Lower Limit vs. Upper Limit			X	X
Lower Limit vs. Outside Upper Limit	X			
Upper Limit vs. Outside Upper Limit	X		X	X

Product Attribute - Appearance

Outside Lower Limit vs. Outside Upper Limit	X			
Outside Lower Limit vs. Lower Limit	X			X
Outside Lower Limit vs. Upper Limit				X
Lower Limit vs. Upper Limit	X			
Lower Limit vs. Outside Upper Limit	X			
Upper Limit vs. Outside Upper Limit	X			X

a = significant comparison at .01 level.

TABLE 11

F-RATIOS FOR DEPENDENT VARIABLE

Affect

Source of Variation	Men's Socks		Electric Toothbrush		Tape Recorder		Men's Dress Shirt	
	df.	F	df.	F	df.	F	df.	F
Brand	1	10.00 ^(b)	1	12.01 ^(a)	1	93.44 ^(a)	1	24.59 ^(a)
Store	1	9.02	1	.06	1	6.71 ^(b)	1	9.03 ^(b)
Price	3	.30	3	.39	3	.75	3	.45
Brand x Store	1	.72	1	1.26	1	.65	1	.02
Brand x Price	3	.65	3	.99	3	.43	3	3.08 ^(c)
Store x Price	3	.63	3	.59	3	.52	3	1.84
Brand x Store x Price	3	2.17	3	.04	3	.83	3	.99
Within Replicates	323		311		313		326	

a = Significant at .001 level

b = Significant at .01 level

c = Significant at .05 level

TABLE 12

CORRELATION BETWEEN
DEPENDENT VARIABLES

Product - Men's Socks

	Willing to Buy	Attitude	Affect
Perceived Product Quality	.21 ^c	.58 ^a	.24 ^c
Willing to Buy		.15	.21 ^c
Attitude			.28 ^b

Product - Electric Toothbrush

Perceived Product Quality	.29 ^b	.42 ^a	.41 ^a
		.23 ^c	.43 ^a
			.35 ^a

Product - Men's Dress Shirt

Perceived Produce Quality	.18	.53 ^c	.44 ^a
Willing to Buy		.18	.29 ^b
Attitude			.40 ^a

Product - Tape Recorder

Perceived Product Quality	.39 ^a	.66 ^a	.38 ^a
Willing to Buy		.26 ^b	.22 ^c
Attitude			.45 ^a

a = Significant at .001 level.

b = Significant at .01 level.

c = Significant at .05 level.

Table 13
Importance of Factors In
Predicting Product Quality

Standardized Coefficients					
Product	Brand	Store	Price	Attribute Evaluation	Explained Variance
Men's Dress Shirt	-.295 ^a	-.209 ^a	.333 ^a		.243
	-.209 ^a	-.101 ^a	.268 ^a	.471 ^a	.442
Men's Socks	-.168 ^a	-.238 ^a	.435 ^a		.275
	-.112 ^a	-.147 ^a	.263 ^a	.516 ^a	.500
Electric Toothbrush	-.287 ^a	-.176 ^a	.072		.117
	-.173 ^a	-.164 ^a	.050	.405 ^a	.267
Tape Recorder	-.298 ^a	-.151 ^a	.253 ^a		.185
	-.124 ^a	-.091 ^a	.110 ^a	.658 ^a	.561

a. Significantly different from zero at .05, $t = 1.65$



